VARIATIONS

1. All dissimilarities of characters between members of the same species are called variations.
2. The heritable variations form the 'raw material' for evolution.

KINDS AND CLASSIFICATION

3. Variations may be beneficial or harmful to the variants.
4. Variations may be morphological, physiological or psychological.
5. The morphological variations may relate to the shape, size, colour and structure of body or its parts.
6. Physiological variations deal with the functional capacities and psychological to mental attributes.

1. Somatogenic and Blastogenic Variations

7. Somatogenic, somatic or phenotypic variation is restricted to the body parts.
8. Somatogenic variations are non-inheritable and hence useless for evolution.
9. Blastogenic variations are **germinal,** *i.e.*, due to differences in the genotype of variants and form the basis for evolution.

2. C...inuous and Discontinuous Variations

10. **Continuous variations** are small and graded; these include variations in colour, shape, size, weight and structure of body parts. These variations may be somatogenic or blastogenic.
11. Discontinuous variations are discrete and distinct variations. These arise by sudden genic changes *i.e.*, mutations.
12. **Discontinuous variations** are called **qualitative** (substantive) when these relate to colour, form, size and other characteristics of body and its parts.
13. **Ancon sheep of Seth Wright** (1791) is a famous example of substantive discontinuous variations.
14. **Quantitative** (meristic) variations are called **positive** when the number of parts in variant is more than normal and **negative** when the number is less than normal.
15. More than five digits in hands or feet and more than twelve pairs of ribs in certain people, six or more than arms in starfishes and more sepals and petals in flowers are common examples of positive meristic variations.
16. A child is having one kidney since birth and it is a negative meristic variation.

3. Determinate and Indeterminate Variations

17. **Determinate variations** are adaptive and selective variations of definite evolutionary lines, developing progressively generation after generation. These are called **orthogenic variations.**
18. **Indeterminate variations** are of no particular evolutionary line and of no specific limit of development. These are caused by mutation and appear suddenly.